What is the current state of EHR ROI in Small- to Medium-Sized Physician Offices?

Given the relatively new state of EHR implementation in small- to medium-sized practices and lack of current widespread adoption, only office-specific case studies of EHR implementations currently exist (see below), but fail to provide meaningful average estimated ROI that can be generalized to a state or national population of physician offices. The following reasons have been offered to explain why generalizing the findings of current case studies would not offer meaningful ROI.

| Smaller physician offices that have implemented EHRs have realized considerably different EHR ROI due to the variations in the determinate variables for ROI. | Variations in physician support of EHR implementation  
Variations in EHR implementation support  
Variation in office activities and expenditures (e.g., office square footage, staffing hours, patient volume, and physician numbers)  
Variation in EHR software and data management  
Variation in EHR component selection, implementation and use (the wide menu of EHR components offer varied ROI when selected in different combinations by the physician offices) |
| Smaller physician offices have just recently begun implementing EHRs and exploring issues that directly affect ROI. | Patient privacy issues  
Private and government insurance reimbursement systems that are not compatible with EHR systems  
Lack of current, national interoperability of EHR applications  
Clinical office workflow design is generally not yet compatible with EHR needs |

How long is it taking to see a ROI and how much is being realized?

Though case studies have presented conflicting ROI results, the most comprehensive case study to date has made the following findings:

| EHR ROI Per Physician Per Year over a 5-year Implementation Period |
| ROI | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| Average | -$21,700 | $21,200 | $14,600 | $47,200 | $47,200 |
| Minimum | -$11,900 | $8,000 | $4,700 | $20,100 | $20,100 |
| Maximum | -$26,600 | $41,300 | $31,400 | $85,100 | $85,100 |

| 5-Year EHR ROI Per Physician based on range of EHR Features Implemented |
| Feature | Light EHR | Medium EHR | Full EHR |
| Online Patient Charts | ✓ | ✓ | ✓ |
| Electronic Prescribing | ✓ | ✓ | ✓ |
| Laboratory Ordering | ✓ | ✓ | ✓ |
| Radiology Ordering | ✓ | ✓ | ✓ |
| Electronic Charge Capturing | ✓ | ✓ | ✓ |
| Average ROI | -$18,200* | $44,600* | $86,400* |

*Assumes a 5% discount rate
What is working?

By reviewing a wide range of case studies that have been conducted to study small- to medium-sized physician office implementation of EHRs, the general findings are that ROI can be maximized if common barriers and benefits are addressed at implementation onset\textsuperscript{14,15,16,17}.

\begin{tabular}{|l|l|}
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Attributes of physician offices that have realized qualitative and quantitative ROI from EHR implementation. & \\
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$\rightarrow$ EHR office champion identified at onset & \\
$\rightarrow$ Office physicians committed to EHR implementation at onset & \\
$\rightarrow$ Electronic data exchange with labs and vendors is maximized & \\
$\rightarrow$ Comprehensive EHR support is established at onset & \\
$\rightarrow$ Office identified specific opportunities for improvement that the EHR system would address—this led EHR vendor selection and focused EHR implementation efforts & \\
$\rightarrow$ Complete conversion to a paperless system from onset & \\
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\end{tabular}

\textsuperscript{10} Miller et al (2003).
\textsuperscript{11} MacDonald K, Metzger J. (2002).
\textsuperscript{13} Tables and data adapted from Wang, S. J. et al (2003).
\textsuperscript{14} MacDonald K, Metzger J. (2002).
\textsuperscript{15} Miller et al (2003).
\textsuperscript{16} Wager et al (2000).
\textsuperscript{17} Wang et al (2003).